## REMARKS

A copy of Japan 9-102322 is attached hereto, along with a copy of Applicants' original 1449. Consideration of the reference and return of the initialed 1449 is requested.

Claim 1-12, 14 and 21-23 have been canceled. However, new Claim 26 has been added, which is essentially a product-by-process claim similar to original Claim 21. This claim should be included within the elected group as its patentability will become apparent by reference to the following explanation, thus necessitating no further search.

The present invention method is one for producing an electrolyte membrane wherein a precursor membrane comprising a polymer capable of being graft-polymerized is exposed to a plasma in an oxidative atmosphere so as to generate a surface carbonyl group and/or a surface hydroxyl group. This plasma-treated precursor membrane then has graft-polymerized to it a side chain polymer, and a proton conductive functional group is introduced to the side chain polymer. As explained at, e.g., specification page 7, the invention plasma treatment in an oxidative atmosphere transforms the surface of the precursor membrane, making it more hydrophilic by the provision of surface carbonyl groups and/or hydroxyl groups. This membrane, after graft-polymerizing and the introduction of a proton-conductive functional group, overcomes problems associated with increased resistance to the transport of water between the electrode and the electrolyte membrane and increases the hydrophilicity and the adhesiveness of the membrane surface, providing an electrolyte membrane with excellent electrical conductivity. This membrane thus makes it easier to introduce humidifying water and to remove water generated during use from fuel cells. As noted in the specification, the electrolyte membranes of the invention also provide excellent stability during operation of a fuel cell. In this regard see Table 1 at specification page 11 and the steady state data contained in Table 2 at specification page 13 for both the first and second embodiments (Examples) of the invention.

The two Nezu references applied against the claims (U.S. 5,817,718 and U.S. 6,242,123), both as primary references, fail to disclose or suggest the presently claimed method. These two primary references use irradiation, instead of plasma exposure in an oxidative atmosphere to generate a surface carbonyl group and/or hydroxyl group.

None of the secondary references make up for this lack of disclosure in the primary references. That is, none of Kono, Hubbard, or Goldberg disclose or suggest a plasma treatment scheme wherein a surface carbonyl group and/or surface hydroxyl group is generated. Perhaps the closest reference is Goldberg, but this reference exposes a surface to glow discharge plasma (GDP) so as to activate and/or excite the surface of the material followed by, subsequently, exposing the surface to air or oxygen to form peroxy or hydroperoxy groups. While Goldberg indicates that perhaps other chemically reactive atomic or molecular species may be formed on the surface, this is mere conjecture. Moreover, Goldberg does not include the step of exposing the surface of a precursor membrane to a plasma in an oxidative atmosphere to generate a surface carbonyl group, a surface hydroxyl group, or a surface carbonyl group and a surface hydroxyl group, as claimed.

Accordingly, and because even the combination of references cited in the Official Action fails to disclose or suggest the method as now claimed Applicants respectfully request the reconsideration and withdrawal of the outstanding rejections, and the passage of this case to Issue. As noted above, Applicants respectfully request that new Claim 26 be included in the allowable claims, as the electrolyte membrane produced by the method of Claim 13 clearly is distinct and different from anything disclosed or suggested by the prior art.

Respectfully submitted,

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IN THE SPECIFICATION

IN THE CLAIMS

1-12. (Canceled).

13. (Amended) A method of producing an electrolyte membrane comprising:

[preparing] providing a precursor membrane comprising a polymer which is capable of being graft polymerized;

exposing the surface of the precursor membrane to a plasma in an oxidative atmosphere to generate a surface carbonyl group, a surface hydroxyl group, or a surface carbonyl group and a surface hydroxyl group;

graft-polymerizing a side chain polymer to the plasma treated precursor membrane; and

introducing a proton conductive functional group to the side chain polymer.

14. (Canceled).

15. (Amended) The method of Claim [14] 13, wherein the polymer is at least one polymer selected from the group consisting of polyethylene, polypropylene, polyvinylchloride, polyvinylidenedichloride, polyvinylflouride, polyvinylidenedifluoride,

polytetratfluoroethylene, ethylene-tetrafluoroethylene copolymer, tetrafluoroethylene-perfluoroalkylvinylether copolymer, and tetrafluoroethylene-hexafluoropropylene copolymer.

21-23. (Canceled).

24-26. (New).